DEPARTMENT OF NOTES AND REVIEWS

It is the purpose, in this department, to present from time to time brief original notes, both of methods of work and of results, by members of the Society. All members are invited to submit such items. In addition to these there will be given a few brief abstracts of recent work of more general interest to students and teachers. There will be no attempt to make these abstracts exhaustive. They will illustrate progress without attempting to define it, and will thus give to the teacher current illustrations, and to the isolated student suggestions of suitable fields of investigation.—[Editor.]

LEECHES CONSIDERED AS OLIGOCHAETA MODIFIED FOR A PREDATORY LIFE

Michaelsen (Mitt. Zool. Mus. XXXVI, Hamburg, 1919) was led to a study of the relationships between these two groups of animals, by noticing a figure in a recent paper on Sudanese Hirudinea. The figure represented an organ that was interpreted by the author, as a diverticulum of the alimentary tract of the leech, opening to the exterior on the mid-dorsal surface of the 13th somite. Similar organs have been described in certain leeches from Sumatra, in which they are paired, and the external pores are ventrally situated. The figured organ strongly resembles the spermathecae of certain oligochaete species in the families of Enchytraeidae and Lumbriculidae, in which the spermathecae communicate internally with the alimentary tract. Similar relations have also been found in certain species of other families of Oligochaeta.

As a result of his studies, Michaelsen has reached the conclusion that the Hirudinea are, in reality, Lumbriculidae which have undergone special modifications in adaptation to a predatory mode of life. He believes that such a conclusion receives much support from a careful comparison of the structure of two intermediate types of worms: the Branchiobdellidae, and *Acanthobdella peledina* Grube. The former are parasitic in the gill chambers and on parts of the surface of crawfishes, and, as their name indicates, were formerly included with leeches; but recently their closer relationship with the Oligochaeta is generally admitted. *Acanthobdella peledina* is a peculiar leech-like parasite of certain fishes of the genus Salmo, in northeastern Europe, and in western Siberia. On the ventral surface

of several anterior somites, are paired bundles of setae, and the characters of the reproductive organs and of the body cavity are also nearer to those of the Oligochaeta than to those of the leeches. Michaelsen concludes that, although there is some justification for including these two groups in the family Lumbriculidae, it is nevertheless preferable to recognize them as two distinct families of Oligochaeta, Branchiobdellidae and Acanthobdellidae closely related to the Lumbriculidae. After making this disposition of these two groups, the author makes a comparison of the various structural characters of the Hirudinea and Oligochaeta.

Attention is called to the fact that there is a wide range of variation among different representatives of the Oligochaeta, and that most of the characters which one is accustomed to think of as typical of the Oligochaeta are not present in all members of the group, though they may be in a majority of the better known ones. It is also shown that many of the characters of Hirudinea which one is likely to assume as distinguishing them from Oligochaeta, may be found present in certain members of the latter group. Absence of setae occurs in a genus of the oligochaete family Enchytraeidae, as well as in Branchiobdellidae, and they are greatly reduced in numbers and size in various other representatives. As previously mentioned, four pairs of well developed setae are present on each of several anterior somites in *Acanthobdella peledina* which has previously, without question, been assumed to belong to the Hirudinea. The shortened body and thickened body wall of the leeches, with a correlated reduction of the body cavity, are already forecast in Chaetogaster and in certain species of Lumbriculidae, to say nothing of the Branchiobdellidae and Acanthobdella. They are natural accompaniments of a change of food, and assumption of a predatory mode of life.

There is great variation in the structure of the nephridia among the Oligochaeta, and absence of ciliated nephrostomes and of cilia in the excretory part of the ducts is found in species of diverse groups. The ventro-median position of the pores of the efferent ducts of the reproductive organs of leeches has a counterpart in certain species of Lumbriculidae and of the earthworm subfamily Eudrilinae.

The most significant character which distinguishes the Hirudinea, in general, from the Oligochaeta, is the position of the spermaries

in somites posterior to the one which contains the ovaries. This relative position of the two kinds of gonads is the opposite of that normally found in Oligochaeta, and in the connecting forms, Branchiobdellidae and Acanthobdella. To account for this reversal of relations, the author refers to instances where Oligochaeta are found with a considerable number of consecutive somites containing gonads; and also to papers by different writers, in which gonads of certain oligochaete species have been shown to produce one kind of germ cells at one time, and at other times to produce those of the opposite kind. From individuals with series of gonads of this type, he thinks it not improbable that there may have been derived descendants in which the relative position of the gonads of the two sexes is in the reverse order from that of the ancestors. For details of structure and references to the literature involved in these comparisons, the original paper must be consulted.

The author thinks it desirable to modify the outlines of classification, to fit these new views of relationship. He proposes a class Clitellata which is co-ordinate with the class Chaetopoda, and with three other classes which contain marine forms and are not involved. The class Clitellata includes two orders, Oligochaeta and Hirudinea; distinguished chiefly by the differences in the degree of development of the body cavity, and the relative order of the gonads. The class Chaetopoda includes two orders, Protochaeta and Polychaeta.

FRANK SMITH

Department of Zoology,
Univ. of Illinois